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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,211	01/17/2007	Yasutoshi Kawaguchi	OKUDP0163US	7642

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MARK D. SARALINO (PAN)  
RENNER, OTTO, BOISSELLE & SKLAR, LLP  
1621 EUCLID AVENUE  
19TH FLOOR  
CLEVELAND, OH 44115

EXAMINER
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SAYADIAN, HRAYR

ART UNIT	PAPER NUMBER
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2814

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12/17/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,211	<b>Applicant(s)</b> KAWAGUCHI ET AL.	
	<b>Examiner</b> Hrayr A. Sayadian	<b>Art Unit</b> 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 3, 7-14 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1, 2, 4-6, 15, and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED OFFICE ACTION

### Applicant's Elections

1. The 11/30/2009 and 8/24/2009 Replies responded to the Lack of Unity Requirements by electing, without traverse, claims 1, 2, 4-6, 15, and 16 for prosecution on the merits.

Accordingly, the 3/24/2010 Office Action withdrew claims 3, 7-14, and 17 from further consideration as being drawn to non-elected inventions and made final the requirements.

The Lack of Unity Requirements and their finality are proper and they are, therefore, maintained.

### 35 U.S.C. § 112 Rejections of the Claims

2. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 16 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter Applicant regards as the invention.

Specifically, "the non-doped nitride semiconductor layer" lacks antecedent basis.

Correction is required.

35 U.S.C. § 112, first paragraph, requires the originally filed specification to contain a written description of the claimed invention. And 35 U.S.C. § 132(a) prohibits any "amendment [from] introduc[ing] new matter into the disclosure of the invention." Accordingly, new matter should not be introduced by either addition or deletion. And any amendment to this claim therefore must have support in the specification, as originally filed, directed to the embodiment describing the elected invention.

**35 U.S.C. § 102 Rejections of the Claims**

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 providing the legal bases for the anticipation rejections in this Office Action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language, or

5. Claims 1, 2, and 15 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by PGPUB US 2003/0132448 for a patent application by "Tsuji-mura."

Tsuji-mura discloses all of the features of the claims. See, for example, [0070] and FIG. 4, wherein layer 16 corresponds to the first layer and layer 17 corresponds to the second layer. And layer 17 is in contact with layer 16.

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With respect to claim 2, the recitation "wherein the second p-type ... layer functions as a barrier layer for suppressing a carrier overflow from the active layer" has been considered and determined to be functional language of intended use.

"The subject matter of a properly construed claim is defined by the terms that limit its scope. ... . As a general matter, the grammar and intended meaning of terms used in a claim will dictate whether the language limits the claim scope. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. The following are examples of language that may raise a question as to the limiting effect of the language in a claim:

- (A) statements of intended use or field of use,
- (B) 'adapted to' or 'adapted for' clauses,
- (C) 'wherein' clauses, or
- (D) 'whereby' clauses.

This list of examples is not intended to be exhaustive." See M.P.E.P § 2106IIC.

If a prior art structure is capable of performing the intended use recitation in a product claim, then it meets the claim. See, for example, *In re Schreiber*, 44 USPQ2d 1429, 1431-1432 (Fed. Cir. 1997) (affirming anticipation rejection based on Board's factual finding that the reference dispenser (a spout disclosed as useful for purposes such as dispensing oil from an oil can) would be capable of dispensing popcorn in the manner set forth in appellant's claim) and cases cited therein.

"[A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). A "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

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Accordingly, absent reciting structural limitations achieving the functional effect, or affect, a functional recitation is determined to be intended-use (or intended-outcome) language not distinguishing scope of an apparatus claim over a prior art apparatus capable of performing the intended-use (or the intended-outcome) language in the claim. See M.P.E.P § 2114 and the precedents cited therein.

The device Tsujimura discloses shares the claimed physical/structural features of claim 2 and therefore is capable of performing the intended use functional language of claim 2. Indeed layer 17 has higher energy gap than layer 16 and the active layer and therefore is a barrier and functions as a barrier for suppressing carrier overflow from the active layer.

### **35 U.S.C. § 103 Rejections of the Claims**

6. The text of the appropriate paragraph(s) of 35 U.S.C. § 103, providing the legal basis for the obviousness rejection(s) in this Office Action, can be found in a previous Office Action.
7. Claims 4-6 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsujimura further in view of U.S. Pat. No. 6,456,640 to "Okumura."

Tsujimura appears to fail to explicitly disclose there being a non-doped third layer containing Al and being between the active layer and the first layer, wherein the third has a bandgap equal to the first layer, which bandgap is smaller than the bandgap of the second layer.

The semiconductor art however well knows the benefits of such an arrangement.

For example, Okumura teaches using a light guiding layer that comprises two sub-layers, one light guiding sublayer next to the active layer and being undoped and one on the other side of the undoped light guiding sublayer and being p-doped. See, for example, column 8, lines 21-38. And Okumura teaches that such an arrangement results in "fewer carriers exist[ing] in the guide layers, thereby reducing the amount of light absorbed by free carriers and allowing for further reduction of the oscillation threshold current."

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Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention of this application to have modified the first p-type AlGaIn layer 16 (which is a p-doped light guiding layer) of the device Tsujimura discloses by adding to it an undoped light guiding sublayer (in between the first layer 16 and the AL) so "fewer carriers exist[] in the guide layers, thereby reducing the amount of light absorbed by free carriers and allowing for further reduction of the oscillation threshold current," as Okumura teaches.

Examiner notes that the Okumura discloses using the same material for the two sublayers and therefore the undoped sublayer will have energy gap that is equal to that of the first layer and that is smaller than that of the second layer.

### **Response to Arguments**

8. The arguments in the 12/13/2010 Reply have been fully considered. These arguments however are moot in view of the new rejection(s).

The Reply argues that the prior art applied in the previous Office Action fails to show the second layer in contact with the first layer.

In response, Examiner notes that Tsujimura specifically teaches the feature the Reply argues for.

Accordingly, rejecting the claims claim unpatentable over the prior art is proper and is therefore maintained.

### **CONCLUSION**

9. **A shortened statutory period for reply to this Office Action is set to expire THREE MONTHS from the mailing date of this Office Action.** Extension of this time period may be granted under 37 CFR § 1.136(a). **The maximum period for reply, however, is SIX MONTHS from the mailing date of this Office Action.**

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Any inquiry concerning this communication or earlier communications from an Examiner should be directed to Examiner Hrayr A. Sayadian, at (571) 272-7779, on Monday through Friday, 7:30 am – 4:00 pm ET.

If attempts to reach Mr. Sayadian by telephone are unsuccessful, his supervisor, Supervisory Primary Examiner Wael Fahmy, can be reached at (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available only through Private PAIR. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. The Electronic Business Center (EBC) at (866) 217-9197 (toll-free) may answer questions on how to access the Private PAIR system.

/Hrayr A. Sayadian/

Primary Examiner, Art Unit 2814

1-571-272-7779